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EXAMINER

NGUYEN, PHU K

ART UNIT	PAPER NUMBER
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2671

DATE MAILED: 10/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/816,405

Applicant(s)

TOYAMA ET AL.

Examiner

Phu K. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 18-27 is/are rejected.
- 7) ☒ Claim(s) 16 and 17 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over REISFIELD (6,301,496).

As per claim 1, Reisfield teaches the claimed "method for fitting a surface to a point group using a computer" comprising the steps of: "judging reliability of the point group" (Reisfield, column 24, lines 16-31); and "fitting the surface to the point group based on a result of the judgment of reliability obtained in the first step" (Reisfield, figure 8, column 28, lines 29-53). It would have been obvious for Reisfield to "change the method of fitting" the surface to the point group because the level of reliability

determines how the transparency technique is used in the construction of the surface (Reisfield, column 24, lines 29-33).

Claim 2 adds into claim 1 “wherein the first step comprising judging reliabilities of points composing the point group, and the second step comprising changing the method for fitting the surface to the point group by varying a weight of each of the points based on the reliability of each of the points” which Reisfield suggests in column 4, lines 2-21. It would have been obvious for Reisfield to “change the method of fitting” the surface to the point group because the level of reliability determines how the transparency technique is used in the construction of the surface (Reisfield, column 24, lines 29-33).

Claim 3 adds into claim 1 “wherein data indicating reliabilities of the point group and the points are obtained by three-dimensional measurements” which Reisfield teaches in column 2, lines 37-40.

As per claim 4, Reisfield teaches the claimed “device for fitting a surface to a point group using a computer” comprising the steps of: “an obtaining section for determining reliability of each of points composing the point group” (Reisfield, column 24, lines 16-31); and “fitting of the surface to the point group depending on the reliabilities” (Reisfield, figure 8, column 28, lines 29-53). It would have been obvious for Reisfield to have a “modifying section for varying a degree of the fitting” the surface to

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the point group because the level of reliability determines how the transparency technique is used in the construction of the surface (Reisfield, column 24, lines 29-33).

Claim 5 adds into claim 1 "a weighting section for assigning a weight for each of the points based on the reliability of each of the points, wherein the modifying section changes a degree of the fitting of the surface to the point group depending on the weights" which Reisfield suggests in column 4, lines 2-21. It would have been obvious for Reisfield to "change the method of fitting" the surface to the point group because the level of reliability determines how the transparency technique is used in the construction of the surface (Reisfield, column 24, lines 29-33).

Claim 6 adds into claim 4 "wherein the surface has been prepared in advance of the fitting" which would have been obvious because Reisfield reference can be used to build the normal heart to compare with the abnormal heart (figures 10-11, 14).

Claim 7 adds into claim 4 "wherein an amount of data for the surface is smaller than that of the point group" which would have been obvious because the point group contains the additional data of the reliability or abnormal condition of the object.

Claim 8 adds into claim 4 "wherein the data of the surface includes attribute information associated with form information" which would be obvious because

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Reisfield's object contains the for data representing the 3D graphic object including the vertices and their transparency coefficients.

Claim 9 adds into claim 8 "wherein the data of the surface represents a form of a face, and the attribute information represents characteristic parts of the face" which would have been obvious because Reisfield invention can be used for 3D image reconstruction (Reisfield, column 25, lines 20-26).

As per claim 10, Reisfield teaches the claimed "system" comprising: "a measuring unit for measuring a distance therefrom to a plurality of points on a surface of an object; a calculator for calculating reliabilities of respective distances of the measured distances" (Reisfield, column 24, lines 16-31); and "a processor for modifying prepared data which represents a three-dimensional form using the reliabilities so that a three-dimensional form represented by the modified data resembles a form of the object" (Reisfield, figure 8, column 28, lines 29-53). It would have been obvious for Reisfield to "modifying prepared data" which represents a three-dimensional form because the level of reliability determines how the transparency of the vertices is used in the construction of the surface (Reisfield, column 24, lines 29-33).

As per claim 11, Reisfield teaches the claimed "computer program for fitting a surface to a point group that enables a computer to perform" the steps of: "judging a reliability of the point group" (Reisfield, column 24, lines 16-31); and "fitting the surface

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to the point group based on a result of the judgment of reliability" (Reisfield, figure 8, column 28, lines 29-53). It would have been obvious for Reisfield to "change the method of fitting" the surface to the point group because the level of reliability determines how the transparency technique is used in the construction of the surface (Reisfield, column 24, lines 29-33).

Claims 12-15, 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over MAURER et al. (6,580,811).

As per claim 12, Maurer teaches the claimed "processor" comprising: "an obtaining section for obtaining original data generated by measurements" (Maurer, feature positions, jets, figures 2 and 17); a first modifying section for modifying a first standard model based on the obtained data, the first standard model being previously prepared independently of the obtaining of original data (Maurer, texture information); "a second modifying section for modifying a second standard model, the second standard model being relative to the first standard model (Maurer, column 13, lines 14-45). It would have been obvious for the modification of the first model being "based on an effect of the modification of the first standard model" because Maurer facial texture feature and underlying muscle features are closed related and directly effect each other.

Claim 13 adds into claim 12 "wherein the first standard model is a model for skin and the second standard model is a model for skeleton or a model for muscle, the original data being data whose object is a surface of a human head" which Maurer

suggests in column 13, lines 1-45 in which the texture feature might be the skin and the expressional feature might relate to the muscle.

Claim 14 adds into claim 12 "wherein the first standard model has a plurality of construction points corresponding to which a plurality of control points are defined; the second standard model has a plurality of construction points corresponding to which some of the control points defined by the first standard model are defined; the first standard model is modified in accordance with movements of the construction points which move in accordance with movements of the control points; and the second standard model is modified in accordance with movements of the construction points which move in accordance with movements of the control points" which Maurer teaches in figures 12-13.

Claim 15 adds into claim 14 "wherein the control points for moving the construction points of the second standard model are corrected when adopting a result of the modification of the first standard model" which Maurer suggests in column 11, lines 26-35.

As per claim 18, Maurer teaches the claimed "process" comprising: "obtaining original data generated by measurements" (Maurer, feature positions, jets, figures 2 and 17); "modifying a first standard model which has been prepared separately from the obtaining of the original data based on the obtained original data" (Maurer, texture

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information); "modifying a second standard model corresponding to the first standard model" (Maurer, column 13, lines 14-45). It would have been obvious for the modification of the first model being "based on an effect of the modification of the first standard model" because Maurer facial texture feature and underlying muscle features are closed related and directly effect each other.

Claim 19 adds into claim 18 "wherein the first standard model has a plurality of construction points, and a plurality of control points are defined corresponding to the construction points; the second standard model has a plurality of construction points and some of the control points defined by the first standard model are defined corresponding to the construction points; the first standard model is modified in accordance with movements of the construction points which move with the control points move; and the second standard model is modified in accordance with movements of the construction points which move with the control points move" which Maurer teaches in figures 12-13.

As per claim 20, Maurer teaches the claimed "processor" comprising: "an obtaining section for obtaining original data generated by measurements" (Maurer, feature positions, jets, figures 2 and 17); "a storage section for storing a first data representing a standard skin model of a human head and a second data representing a standard skeleton model or a standard muscle model of the human head, the first data and the second data are corresponding to each other" which Maurer suggests in column

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13, lines 1-45 in which the texture feature might be the skin and the expressional feature might relate to the muscle; and "a processing section for modifying the first data and the second data" (Maurer, column 13, lines 14-45). It would have been obvious for "the standard skin model and the standard skeleton model or standard muscle model fit with the measured surface form" because Maurer facial texture feature and underlying muscle features are closed related and directly effect each other.

As per claim 21, Maurer teaches the claimed "computer program for modeling, which enables a computer" to perform the steps of: "obtaining original data generated by measurements" (Maurer, feature positions, jets, figures 2 and 17); "modifying a first standard model which has been prepared separately from the obtaining of the original data based on the obtained original data" (Maurer, texture information); "modifying a second standard model corresponding to the first standard model" (Maurer, column 13, lines 14-45). It would have been obvious for the modification of the first model being "based on an effect of the modification of the first standard model" because Maurer facial texture feature and underlying muscle features are closed related and directly effect each other.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 22-25, and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by MAURER et al. (6,580,811).

As per claim 22, Maurer teaches the claimed "device for modifying a surface based on a three-dimensional point group" comprising: "a selection section for selecting a plurality of partial areas from the point group" (Maurer, figures 12-13; facial features, jets) and "a modifying section for modifying a surface based on a point group of each of the selected partial areas" (Maurer, figures 16A-16B).

As per claim 23, Maurer teaches the claimed "method for generating a three-dimensional model" comprising: "selecting a plurality of partial areas from measurement data obtained by measuring an object" (Maurer, figures 12-13; facial features, jets) and "modifying a three-dimensional model based on the measurement data of each of the selected partial areas" (Maurer, figures 16A-16B).

As per claim 24, Maurer teaches the claimed "modeling device for generating a three-dimensional model" comprising: "a selection section for selecting a plurality of partial areas from measurement data obtained by measuring an object" (Maurer, figures 12-13; facial features, jets) and "a modifying section for modifying a three-dimensional

model based on a measurement data of each of the selected partial areas" (Maurer, figures 16A-16B).

Claim 25 adds into claim 24 "wherein the modifying section performs modification with respect to the standard model based on the whole measurement data before performing modification based on the measurement data of each of the partial areas" which Maurer teaches in column 13, line 35 to column 14, line 30.

As per claim 27, Maurer teaches the claimed "computer program for generating a three- dimensional model that enables a computer" to perform steps of: "selecting a plurality of partial areas from measurement data obtained by measuring an object" (Maurer, figures 12-13; facial features, jets) and "modifying a three-dimensional standard model based on measurement data of each of the selected partial areas" (Maurer, figures 16A-16B).

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over MAURER et al. (6,580,811).

Claim 26 adds into claim 24 "wherein control points for modifying the standard model is defined on the standard model, and at least one of the control points, reduction rate for reducing a number of measurement data" (Maurer, column 10, line 57 to column 11, line 25). It would have been obvious for using "an evaluation function for

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determining a degree of modification of the standard model is changed” because such function is widely used to measuring the modification of the original model.

Claims 16 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: in claim 16, which depends on claim 14, the relationship between the first and second standard models has been defined as “control points corresponding to the construction points of the second standard model are control points corresponding to construction points among the construction points of the modified first standard model which are the closest to the construction points of the second standard model”.

The following is a statement of reasons for the indication of allowable subject matter: in claim 17, which depends on claim 14, the relationship between the first and second standard models has been defined as “control points corresponding to construction points of the second construction points are control points corresponding to points obtained by projecting the construction points of the second standard model on the first standard model”.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu K. Nguyen whose telephone number is (703)305 - 9796. The examiner can normally be reached on M-F 8:00-4:30.

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The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3800.

Phu K. Nguyen
August 24, 2003

Phu K. Nguyen
PHU K. NGUYEN
PRIMARY EXAMINER
GROUP 2400